

REMARKS

Claims 1-27 are currently being amended to conform the claims to U.S. practice. The amendments to the claims presented herein do not introduce new matter within the meaning of 35 U.S.C. §132. Accordingly, the Examiner is respectfully requested to enter these amendments.

1. Rejection of Claims 1-13 and 23-27 Under 35 U.S.C. §102(b) to

EP 0 640 624

Applicant respectfully traverses the rejection of claims 1-13 and 23-27 under 35 U.S.C. §102(b) as being anticipated by EP 0 640 624 (herein referred to as, "Masaki, et al.").

As long-settled by the courts, for a reference to anticipate an invention, all of the elements of that invention must be present in the reference. The test for anticipation under section 102 is whether each and every element as set forth in the claims is found, either expressly or inherently, in a single prior art reference. *Verdegaal Bros. V. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must also be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

With respect to the instant rejection, the Office Action

states, in part,

Masaki et al discloses the process for producing a high stereoregular butene-1 copolymer. Masaki et al do not specify the copolymer being random, having r_1, r_2 reactivity ratios being less than 2, or specific isotacticity value of butene-1 units in the copolymer. However, Koshyama et al in EP 186,287 and Fukui et al in JP 06206940 disclose a process for producing random butene-1 copolymer with alpha olefin comprising polymerizing the monomers in the presence of a substantially the same catalyst comprising. . . .

However, first and foremost, Applicant respectfully traverses the Examiner's contention that Masaki, et al. discloses, ". . . the process for producing a high stereoregular butene-1 copolymer." In fact, Applicant respectfully believes Masaki, et al. generally relates to a particularly disclosed catalyst, wherein the catalyst contains a specific organic silicon compound. See page 3, lines 14-38 in Masaki, et al. Additionally, with respect to the specific organic silicon compound, Masaki, et al. discloses on page 3, lines 39-42,

The effects of the present invention **can be attained only** when an organic silicon compound having a specific structure (specifically, trialkoxysilane compound containing an aliphatic substituent in which the carbon atom in the α -position adjacent to a silicon atom is a tertiary carbon atom and the carbon atom in the β -position is a tertiary carbon atom) is used as a promoter, particularly an external donor. (Emphasis added)

Therefore, Applicant respectfully believes Masaki, et al. relates to a specifically disclosed catalyst system, with the catalyst system containing the specifically disclosed organic silicon compound, with

the organic silicon compound being *critical* to the catalyst system of Masaki, et al.

Having outlined the general purpose of the disclosure of Masaki, et al. *supra*, as for the Examiner's contention that Masaki, et al. presumably discloses a process for producing Applicant's currently and specifically claimed butene-1 copolymers, Applicant respectfully believes Masaki, et al. merely discloses that a variety of polyolefins could be produced using the specific catalyst system disclosed therein. In fact, Masaki, et al. generally discloses on page 7, lines 18-26,

As the olefin to be polymerized there may be used **an olefin having up to 12 carbon atoms**. Typical examples of olefin include ethylene, propylene, butene-1, 4-methylpentene-1, hexene-1, and octene-1. The present invention is advantageous for stereospecific polymerization of an α -olefin having 3 or more carbon atoms, such as a mixture of these olefins and a mixture thereof with ethylene. The present invention is particularly advantageous for **stereospecific polymerization of propylene or a mixture of propylene and up to 20 mol% of ethylene or a higher α -olefin (i.e., having 4 or more carbon atoms), and most advantageous for homopolymerization of propylene**. According to the process of the present invention, a propylene polymer having a melting point of 164 ° C or higher and a xylene-soluble content (% XSRT as defined below) at room temperature of 2.0 % or less can be obtained. (Emphasis added)

Accordingly, Applicant respectfully believes not only does Masaki, et al. merely only generally disclose that a variety of olefins could possibly be polymerized using the catalyst system disclosed therein, wherein the catalyst system comprises the critical organic

silicon compound, but Masaki, et al. also discloses the catalyst systems are more specifically useful for polymerizing **polypropylene** homo- and copolymers. In fact, this is evidenced by every working example in Masaki, et al. being directed towards polymerizing propylene. Additionally, Applicant respectfully believes nowhere in Masaki, et al. is there any disclosure of specifically copolymering butene-1 with ethylene, propylene, or mixtures thereof, to produce the currently claimed butene-1 copolymers comprising the currently claimed comonomers in the currently claimed molar percentages. However, this is what is required for an anticipation under the law.

See MPEP §2131. Therefore, Applicant respectfully traverses the Examiner's contention that Masaki, et al. discloses a process for producing Applicant's currently claimed butene-1 copolymers, and as such, for this reason alone, Applicant respectfully believes the instant rejection should be withdrawn.

Notwithstanding, the current Office Action states,

Masaki et al do not specify the copolymer being random, having r_1, r_2 reactivity ratios being less than 2, or specific isotacticity value of butene-1 units in the copolymer. However, Koshyama et al in EP 186,287 and Fukui et al in JP 06206940 disclose a process for producing random butene-1 copolymer with alpha olefin comprising polymerizing the monomers in the presence of a substantially the same catalyst comprising. . . .

First and foremost, with respect to the Examiner relying on EP 0 186 287 (herein referred to as, "Kohyama, et al.") and JP 06-206940 (herein referred to as, "Fukui, et al.") for the instant

anticipation rejection, Applicant notes MPEP §2131.01 states,

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to:

(A) Prove the primary reference contains an 'enabled disclosure;'

(B) Explain the meaning of a term used in the primary reference; or

(C) Show that a characteristic not disclosed in the reference is inherent.

See paragraphs I-III below for more explanation of each circumstance.

With respect to the instant rejection, Applicant believes the Examiner is attempting to use Kohyama, et al. and Fukui, et al. in the third prong outlined above (i.e., to show that a characteristic not disclosed in the primary reference is inherent.) However, Applicant respectfully believes the Examiner's reliance on both Kohyama, et al. and Fukui, et al. to show inherency is irrevocably flawed.

In particular, before even examining the disclosure of either Kohyama, et al. or Fukui, et al., the Examiner clearly acknowledges that,

However, Koshiyama et al in EP 186,287 and Fukui et al in JP 06206940 disclose a process for producing random butene-1 copolymer with alpha olefin comprising polymerizing the monomers in the presence of a **substantially the same catalyst** comprising. . . .
(Emphasis in original)

Accordingly, given Kohyama, et al. and Fukui, et al. only merely disclose **substantially** the same catalyst, and not the identical or same catalyst as that disclosed in Masaki, et al., any reliance on either of these documents to show inherency is misguided. In fact, not only is the specific catalyst comprising the specific organic silicon compound of Masaki, et al. *critical* to the invention as discussed *supra*, but even more prevailing is the fact that inherency can only be established by what is *necessarily* present in the prior art, and *cannot* be established by probabilities or possibilities. See MPEP §2131.01 (III) and §2112; *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); and *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). Therefore, since the Examiner concedes Kohyama, et al. and Fukui, et al. only disclose substantially the same, or in other words - merely similar - catalyst systems to that of Masaki, et al., Applicant respectfully believes any reliance on either of these two documents to try and establish an anticipation rejection based on inherency is improper, and as such, both documents should be removed.

Nevertheless, with respect to the disclosure of Kohyama, et al., Applicant respectfully believes Kohyama, et al. relates to 1-butene copolymers comprising **C₅-C₂₀ α-olefins**. In fact, Kohyama, et al. states on page 4, lines 23-25,

According to this invention, there is provided a random 1-butene copolymer composed of 1-butene and an alpha-

olefin having 5 to 20 carbon atoms. . . . (Emphasis added)

As such, given the fact that the Examiner has acknowledged the catalyst system of Kohyama, et al. is not identical to that of Masaki, et al., as well as the fact that Kohyama, et al. relates to completely different butene-1 copolymers, Applicant respectfully believes any reliance on Kohyama, et al. to try and demonstrate inherency is misguided and improper. Accordingly, Applicant respectfully believes Kohyama, et al. should be withdrawn as evidence to try and show inherency.

As for Fukui, et al., the current Office Action states, "(See full translation of Fukui et al, JP 06206940. . . ." However, the documents supplied with the current Office Action did not include a full translation of Fukui, et al. (i.e., only a very limited and partial translation was supplied by the Office). Accordingly, Applicant obtained a machine translation of Fukui, et al. from the Japanese Patent and Trademark Office; however, the machine translation obtained is extremely convoluted, and is difficult to interpret. As such, if the Examiner has a full, context-appropriate translation of Fukui, et al. available, Applicant respectfully requests the Examiner to forward the translation to Applicant for review.

Nevertheless, after reviewing the machine translation of Fukui, et al., not only has the Examiner acknowledged the catalyst system

of Fukui, et al. is not identical to that of Masaki, et al., but Applicant respectfully believes Fukui, et al. fails to disclose Applicant's currently claimed butene-1 copolymers comprising, at the very least, a product of the reactivity ratios $r_1 \cdot r_2 \leq 2$; a content of butene-1 units in form of isotactic pentads (mmmm) > 98%; and an absence of 4,1 insertions of butene units. In fact, nowhere in the current Office Action does the Examiner point to where supposedly each and every limitation of Applicant's currently claimed butene-1 copolymer is disclosed or taught by Fukui, et al. Accordingly, Applicant respectfully believes Fukui, et al. should be withdrawn and evidence to try and show inherency.

Furthermore, as with Kohyama, et al. and Fukui, et al. *supra*, the Examiner is also relying on EP 0 172 961 (herein referred to as "Kohyama, et al. II") to try and establish inherency with respect to Masaki, et al. In particular, the current Office Action states,

Kohyama et al in EP 172,961 (Kohyama et al '961) discloses copolymers of butene-1 with 1 mole% of other olefins produced using the catalyst comprising titanium catalyst component, trialkyl aluminum compound and alkylalkoxysilane, having isotacticity value of 99% and MW distribution (Polydispersity Index) less than 6 (page 2, lines 40-65). Though Kohyama et al '961 is silent about absence of 4,1 insertions of butene units, taking into account very high stereoregularity of butene-1 units, produced using the catalyst system mentioned above, absence of irregular 4,1 insertions would be an inherent characteristic of the butene-1 copolymer product.

The process employed by Kohyama et al '961 is identical to the presently claimed process, and is identical to the

process of Masaki et al. The copolymer of Kohyama et al '961 results in an isotacticity content of greater than 99%. Thus, Kohyama et al serves as evidence that the isotacticity of Masaki et al. inherently falls within the claimed range.

However, without getting into whether the processes of Kohyama, et al. II and Masaki, et al. are the same as purported by the Examiner, as with Kohyama, et al. and Fukui, et al. *supra*, the instant rejection relying on Kohyama, et al. II to try and establish inherency is improper and flawed.

First and foremost, with respect to Kohyama, et al. II, Applicant respectfully notes the Examiner concedes Kohyama, et al. II does not disclose or teach Applicant's currently claimed absence of 4,1 insertions of butene units. In reply to this, the Examiner states,

Though Kohyama et al '961 is silent about absence of 4,1 insertions of butene units, taking into account very high stereoregularity of butene-1 units, produced using the catalyst system mentioned above, **absence of irregular 4,1 insertions would be an inherent characteristic of the butene-1 copolymer product.** (Emphasis added)

However, Applicant respectfully believes the current analysis employed above is misguided on several points.

First of all, the Examiner is relying on Applicant's currently claimed absence of 4,1 insertions of butene units as being inherently disclosed within Kohyama, et al. II, without any supporting evidence or documentation to prove such is the case, to try and establish an anticipation rejection - based on inherency -

to Masaki, et al. Yet, Applicant respectfully believes this type of "house of cards" reasoning (i.e., a supposed inherency claim within the evidence provided to try and establish an inherency rejection) is not only procedurally improper, but completely unsubstantiated by any evidence. In fact, the Examiner has not proffered any evidence to support the conclusion that Applicant's currently claimed absence of 4,1 insertions of butene units would inherently be present in Kohyama, et al. II to support the inherency rejection based on Masaki, et al.

Secondly, Applicant respectfully traverses the esoteric reasoning provided by the Examiner for why Kohyama, et al. would inherently comprise Applicant's currently claimed absence of 4,1 insertions of butene units (i.e., ". . . taking into account very high stereoregularity of butene-1 units, produced using the catalyst system mentioned above, absence of irregular 4,1 insertions would be an inherent characteristic. . . ."). In fact, the isotacticity of the butene polymers of Kohyama, et al. were measured, and disclosed, as **triads**, and not **pentads** as currently claimed by Applicant. See page 6, lines 2-7 in Kohyama, et al. II. As such, Applicant respectfully believes the isotacticity triad values disclosed in Kohyama, et al. cannot be directly equated with the isotacticity pentad range currently claimed by Applicant, nor has the Examiner provided any evidence that such a conclusion can be made. Accordingly, given the above arguments, Applicant respectfully

believes Kohyama, et al. II should be withdrawn as evidence to try and show inherency.

In light of the above, Applicant respectfully believes the instant rejection should be withdrawn, and Kohyama, et al., Kohyama, et al. II, and Fukui, et al. should be removed as documents attempting to establish inherency. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the instant rejection.

2. Rejection of Claims 14-19 Under 35 U.S.C. §103(a) to Masaki, et al. in view of U.S. Patent 4,960,820 or U.S. Patent 6,180,720

Applicant respectfully traverses the rejection of claims 14-19 under 35 U.S.C. §103(a) as being unpatentable over Masaki, et al. in view of U.S. Patent 4,960,820 (herein referred to as "Hwo, et al.") or U.S. Patent 6,180,720 (herein referred to as "Collina, et al.").

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under §103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of non-obviousness.

Accordingly, for the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §2142.

Arguments *supra* in section 1 of this response regarding Masaki, et al. are incorporated herein by reference in their entirety. As outlined above, Applicant respectfully believes Masaki, et al. fails to disclose or teach, directly or inherently, Applicant's currently claimed butene-1 copolymers. As for Hwo, et al. and Collina, et al., Applicant respectfully believes both documents fail to remedy the numerous deficiencies of Masaki, et al.

In particular, as with Masaki, et al., Hwo, et al. fails to disclose, teach, or suggest Applicant's currently and specifically claimed butene-1 copolymer comprising up to 40% by mol of at least one comonomer, the comonomer being selected from ethylene, propylene, and mixtures thereof, with the butene-1 copolymers further comprising: (a) a product of the reactivity ratios $r_1 \cdot r_2 \leq 2$; (b) a content of butene-1 units in form of isotactic pentads (mmmm) > 98%; and (c) an absence of 4,1 insertions of butene units. Additionally, Applicant respectfully believes there is no disclosure or teaching within either document as to how to modify either document to arrive at Applicant's currently claimed butene-1

copolymers, nor would one having ordinary skill in the art been motivated to try and modify either Masaki, et al. or Hwo, et al. to try and arrive at Applicant's currently claimed butene-1 copolymers.

However, this is the Examiner's initial burden to establish a *prima facie* case of obviousness. See MPEP §2142. As such, Applicant respectfully believes the instant rejection to Masaki, et al. in view of Hwo, et al. should be withdrawn.

As for Collina, et al., as with Hwo, et al., Collina, et al. fails to disclose, teach, or suggest Applicant's currently and specifically claimed butene-1 copolymer comprising up to 40% by mol of at least one comonomer, the comonomer being selected from ethylene, propylene, and mixtures thereof, with the butene-1 copolymers further comprising: (a) a product of the reactivity ratios $r_1 \cdot r_2 \leq 2$; (b) a content of butene-1 units in form of isotactic pentads (mmmm) > 98%; and (c) an absence of 4,1 insertions of butene units. Additionally, as with Hwo, et al., Applicant respectfully believes there is no disclosure or teaching within either Masaki, et al. or Collina, et al. as to how to modify either document to arrive at Applicant's currently claimed butene-1 copolymers, nor would one having ordinary skill in the art been motivated to try and modify either Masaki, et al. or Collina, et al. to try and arrive at Applicant's currently claimed butene-1 copolymers. However, this is the Examiner's initial burden to establish a *prima facie* case of obviousness. See MPEP §2142. As

such, Applicant respectfully believes the instant rejection to Masaki, et al. in view of Collina, et al. should be withdrawn.

In light of the above, Applicant respectfully believes the instant rejection to Masaki, et al. in view of Hwo, et al. or Collina, et al. should be withdrawn. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the instant rejection.

3. Rejection of Claim 22 Under 35 U.S.C. §103(a) to Masaki, et al. in view of U.S. Patent 4,882,229

Applicant respectfully traverses the rejection of claim 22 under 35 U.S.C. §103(a) as being unpatentable over Masaki, et al. in view of U.S. Patent 4,882,229 (herein referred to as "Hwo, et al. II").

As outlined above, the U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under §103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of non-obviousness.

Accordingly, for the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references

themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §2142.

Arguments *supra* regarding Masaki, et al. are incorporated herein by reference in their entirety. As outlined above, Applicant respectfully believes Masaki, et al. fails to disclose or teach, directly or inherently, Applicant's currently claimed butene-1 copolymers. As for Hwo, et al. II, Applicant respectfully believes both documents fail to remedy the numerous deficiencies of Masaki, et al.

In particular, as with Masaki, et al., Hwo, et al. II fails to disclose, teach, or suggest Applicant's currently and specifically claimed butene-1 copolymer comprising up to 40% by mol of at least one comonomer, the comonomer being selected from ethylene, propylene, and mixtures thereof, with the butene-1 copolymers further comprising: (a) a product of the reactivity ratios $r_1 \cdot r_2 \leq 2$; (b) a content of butene-1 units in form of isotactic pentads (mmmm) > 98%; and (c) an absence of 4,1 insertions of butene units. Additionally, Applicant respectfully believes there is no disclosure or teaching within either document as to how to modify either document to arrive at Applicant's currently claimed butene-1

copolymers, nor would one having ordinary skill in the art been motivated to try and modify either Masaki, et al. or Hwo, et al. II to try and arrive at Applicant's currently claimed butene-1 copolymers. However, this is the Examiner's initial burden to establish a *prima facie* case of obviousness. See MPEP §2142. As such, Applicant respectfully believes the instant rejection to Masaki, et al. in view of Hwo, et al. II should be withdrawn.

In light of the above, Applicant respectfully believes the instant rejection to Masaki, et al. in view of Hwo, et al. II should be withdrawn. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the instant rejection.

4. Rejection of Claims 20-21 Under 35 U.S.C. §103(a) to Masaki, et al. in view of Hwo, et al. and U.S. Patent 4,316,970

Applicant respectfully traverses the rejection of claims 20-21 under 35 U.S.C. §103(a) as being unpatentable over Masaki, et al. in view of Hwo, et al. and U.S. Patent 4,316,970 (herein referred to as "Hughes, et al.").

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under §103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of non-obviousness.

Accordingly, for the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §2142.

Arguments *supra* regarding Masaki, et al. and Hwo, et al. are incorporated herein by reference in their entirety. As outlined above, Applicant respectfully believes Masaki, et al. and Hwo, et al. fail to disclose or teach, directly or inherently, Applicant's currently claimed butene-1 copolymers. As for Hughes, et al., Applicant respectfully believes Hughes, et al. fails to remedy the numerous deficiencies of Masaki, et al. and Hwo, et al.

In particular, as with Masaki, et al. and Hwo, et al., Hughes, et al. fails to disclose, teach, or suggest Applicant's currently and specifically claimed butene-1 copolymer comprising up to 40% by mol of at least one comonomer, the comonomer being selected from ethylene, propylene, and mixtures thereof, with the butene-1 copolymers further comprising: (a) a product of the reactivity ratios $r_1 \cdot r_2 \leq 2$; (b) a content of butene-1 units in form of isotactic pentads (mmmm) > 98%; and (c) an absence of 4,1 insertions

of butene units. Additionally, Applicant respectfully believes there is no disclosure or teaching within Hughes, et al. as to how to modify either Hughes, et al., Masaki, et al., or Hwo, et al. to arrive at Applicant's currently claimed butene-1 copolymers, nor would one having ordinary skill in the art been motivated to try and modify Hughes, et al., Masaki, et al. and/or Hwo, et al. to try and arrive at Applicant's currently claimed butene-1 copolymers. However, this is the Examiner's initial burden to establish a *prima facie* case of obviousness. See MPEP §2142. As such, Applicant respectfully believes the instant rejection to Masaki, et al. in view of Hwo, et al. and Hughes, et al. should be withdrawn.

In light of the above, Applicant respectfully believes the instant rejection to Masaki, et al. in view of Hwo, et al. and Hughes, et al. should be withdrawn. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the instant rejection.

CONCLUSION

Based upon the above remarks, the presently claimed subject matter is believed to be novel and patentably distinguishable over the prior art of record. The Examiner is therefore respectfully requested to reconsider and withdraw all rejections, and allow all pending claims 1-27. Favorable action with an early allowance of the claims pending in this application is earnestly solicited.

U.S. Patent Application
Serial No. 10/532,686

The Examiner is welcomed to telephone the undersigned
practioner if she has any questions or comments.

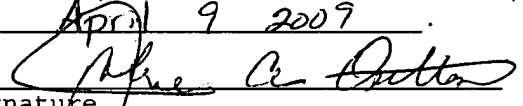
Respectfully submitted,

By: 

Jarrod N. Raphael
Registration No. 55,566
Customer No. 34872

Date: April 9, 2009
Basell USA Inc.
Delaware Corporate Center II
2 Righter Parkway, Suite 300
Wilmington, Delaware 19803
Telephone No.: 302-683-8176
Fax No.: 302-731-6408

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